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(71) Applicant: **Thermal Concepts Limited**
Cardigan, Ceredigion SA43 1EW (GB)

(72) Inventor: **Plowright, Stephen**
Bath BA2 8LU (GB)

(74) Representative: **Austin, Hedley William**
Urquhart-Dykes & Lord
Alexandra House
1 Alexandra Road
Swansea Wales SA1 5ED (GB)

(54) Heat transfer device

(57) Microwave-susceptible heat transfer apparatus, which apparatus comprises a dildo-shaped envelope containing therein a heat transfer medium which is such as to absorb energy applied by microwave irradiation.

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Description

[0001] The present invention is concerned with heat transfer apparatus suitable for personal use, and use thereof.

[0002] Devices which are suitable for transfer of heat to body parts, and which comprise a suitable heatable medium within a suitable cover, casing or envelope are well known. Such devices are required to operate within a relatively narrow temperature range so as to impart perceived warmth, without causing discomfort or injury either in normal use or on accidental rupture or breakage of the device.

[0003] It is known that thermal energy may be transferred to the heatable medium in such a device by means of, for example, an electrical heating element, hot water or other hot liquid, an exothermic chemical reaction, or stimulation by microwave radiation. Examples of media which can be heated by means of microwave radiation are described in, for example, WO93/11400.

[0004] Such devices are, however, intended only for external use; they are generally intended to contact a user's skin or clothing, and are similar in nature to hot-water bottles or the like. Such devices are not suitable for internal use. The present invention is based on the recognition that it is possible to provide a heating device containing microwave heatable material, which device is suitable for internal use, for personal or sexual purposes.

[0005] According to a first embodiment of the present invention, there is therefore provided microwave-susceptible heat transfer apparatus, which apparatus comprises a dildo-shaped envelope containing therein a heat transfer medium which is such as to absorb energy applied by microwave irradiation.

[0006] The dildo-shaped envelope preferably comprises a unitary elongate moulding of a benign or inert plastics material, which is preferably substantially non-absorbent for liquids. The envelope preferably has a hollow interior for receiving the heat transfer medium, the hollow interior generally extending substantially along substantially the entire length of the moulding.

[0007] The dildo-shaped envelope is preferably shaped and dimensioned for insertion into a body cavity, such as, in particular, a vaginal or anal cavity. The envelope preferably has a shaft with a substantially smooth outer surface and a smoothly rounded tip which is integral with the shaft. Ridges or other protuberances may be provided on the external surface of the moulding in some embodiments.

[0008] The end of the envelope which is distal from the tip may be provided with a removable cap or the like, permitting access to the hollow interior for replenishment or removal of the heat transfer medium.

[0009] The shaft may be generally cylindrical, but it is preferred in one embodiment that the shaft is shaped as a simulacrum of a penis. Thus, in this embodiment, one end of the envelope (the tip) is preferably shaped to simulate the glans in use of the apparatus, and the other end (the end distal from the tip) to simulate the testicles.

[0010] The envelope is preferably substantially impermeable to liquids, and thereby provides an effective barrier which substantially prevents contact between the user's body fluids and the heat transfer medium, and vice versa. The envelope is typically of a plastics material which is not itself susceptible to microwaves, for example of polypropylene or the like.

[0011] The heat transfer medium should be one which is susceptible to heating by microwave radiation; it is generally in fluid form so that it can flow substantially throughout the hollow interior within the envelope.

[0012] Such a fluid medium may be a microwave-heatable liquid, or a multiplicity of flowable particles which are heatable by microwaves. When such particles are used, they may be of a material which is inherently heatable by microwaves (of carbon black, for example).

[0013] However, when such particles are used, they preferably comprise porous or hollow solid bodies of materials which are not themselves heatable by microwaves, the bodies being impregnated or filled with microwave heatable liquids (for example, the microwave heatable liquid may be encapsulated in the particles). Such solid bodies should be thermally stable and preferably non-toxic, and may be, for example, of materials such as alumina or silica. Alternatively, when the particles are in the form of microcapsules, they may have walls of a polymer or the like, containing the respective microwave heatable liquid.

[0014] The microwave-heatable liquid should be one of low volatility, and should be chemically inert and stable at least up to the maximum intended operational temperature of the device. Liquids which are rich in either hydroxyl groups or ether groups have suitable microwave susceptibility; examples of suitable such liquids include aqueous liquids (which may, for example, be in gelled form), ethylene glycol, propylene glycol and polymers thereof. A particularly preferred material is a polyethylene glycol.

[0015] In a particularly preferred embodiment of the invention, the apparatus according to the invention is preferably arranged to receive a vibrator mechanism or the like. Such a vibrator mechanism may be provided with a power supply, such as a battery or external electrical supply (such as mains electrical supply). At least part of the vibrator mechanism is typically removably insertable into the dildo-shaped envelope (preferably into a recess distal from the tip of the dildo-shaped envelope).

[0016] The vibrator mechanism preferably includes means for controlling the intensity of the vibrations induced when the power supply is actuated.

[0017] The present invention further comprises a method of sexual stimulation, which comprises providing microwave-susceptible heat transfer apparatus according to the invention; heating the apparatus to no more than a predetermined maximum temperature

(such as about normal body temperature, or slightly above); and inserting the heated apparatus into a body cavity (such as a vagina).

[0018] The heating is preferably by means of microwave radiation; however, it is envisaged that in some circumstances, heating by other means may be preferred. For example, when a source of microwave radiation is not readily available, the apparatus according to the invention may be heated in a water bath or the like.

[0019] In the embodiment where the heat transfer apparatus according to the invention includes a vibrator mechanism, it is preferred to actuate the vibrator mechanism when inserting the apparatus into the body cavity so as to provide additional stimulation.

[0020] Preferred embodiments of the invention will now be described with reference to the accompanying drawings, in which:

Figure 1 shows, by way of example only, an exemplary heat transfer apparatus according to the invention (including a vibrator mechanism);

Figure 2 shows the apparatus of Figure 1, with the vibrator mechanism removed; and

Figure 3 shows an alternative shape of heat transfer apparatus according to the invention.

[0021] Referring first to Figure 1, the apparatus shown comprises a dildo-shaped envelope 1 having a shape simulating that of a penis. Within the envelope is an elongate hollow interior 2 containing microwave heatable particles 3. At one end of the envelope is a vibrator 4, connectable via a power lead 5 to a power supply (not shown).

[0022] The vibrator can be inserted into, or removed from, a socket 6 (see Figure 2) at the end of the envelope.

[0023] In use, the apparatus (not including the vibrator) is generally placed in a microwave heating device and heated (typically for 10 to 20 seconds in a typical microwave oven) to a predetermined temperature. The heated apparatus is then inserted in the relevant body cavity either before or after insertion of the vibrator 4 into its socket 6 and application of power supply to the vibrator. The duration of time for which the apparatus remains in the cavity is a matter of choice by the user.

[0024] Referring to Figure 3, the apparatus shown comprises an envelope 10 of a finger-like shape suitable for insertion into an anal cavity. As with the apparatus shown in Figure 1, the envelope 10 has an elongate hollow interior (not shown) containing microwave heatable particles (not shown). At one end of the envelope is a socket 12 which a vibrator may be inserted into, and removed from. The vibrator can be as vibrator 4 illustrated in Figures 1 and 2.

[0025] The apparatus of Figure 3 may be used in the same fashion as the apparatus illustrated in Figures 1 and 2.

Claims

1. Microwave-susceptible heat transfer apparatus, which apparatus comprises a dildo-shaped envelope containing therein a heat transfer medium which is such as to absorb energy applied by microwave irradiation.

2. Apparatus according to claim 1, wherein said dildo-shaped envelope comprises a unitary elongate moulding of a benign or inert plastics material.

3. Apparatus according to claim 2, wherein said envelope has a hollow interior for receiving the heat transfer medium.

4. Apparatus according to claim 3, wherein said hollow interior extends along substantially the entire length of the moulding.

5. Apparatus according to any of claims 1 to 4, wherein said dildo-shaped envelope is shaped and dimensioned for insertion into a vaginal or anal cavity.

6. Apparatus according to any of claims 1 to 5, wherein said envelope has a shaft with a substantially smooth outer surface.

7. Apparatus according to claim 5, wherein said shaft has a substantially smooth outer surface and a smoothly rounded tip.

8. Apparatus according to claim 6 or 7, wherein the shaft is generally cylindrical, or is shaped as a simulacrum of a penis.

9. Apparatus according to any of claims 1 to 8, wherein an end of the envelope which is distal from the tip is provided with a removable cap, permitting access to the hollow interior for replenishment or removal of the heat transfer medium.

10. Apparatus according to any of claims 1 to 9, which includes a recess for receiving a vibrator mechanism, and a vibrator mechanism suitable to be received in said recess.

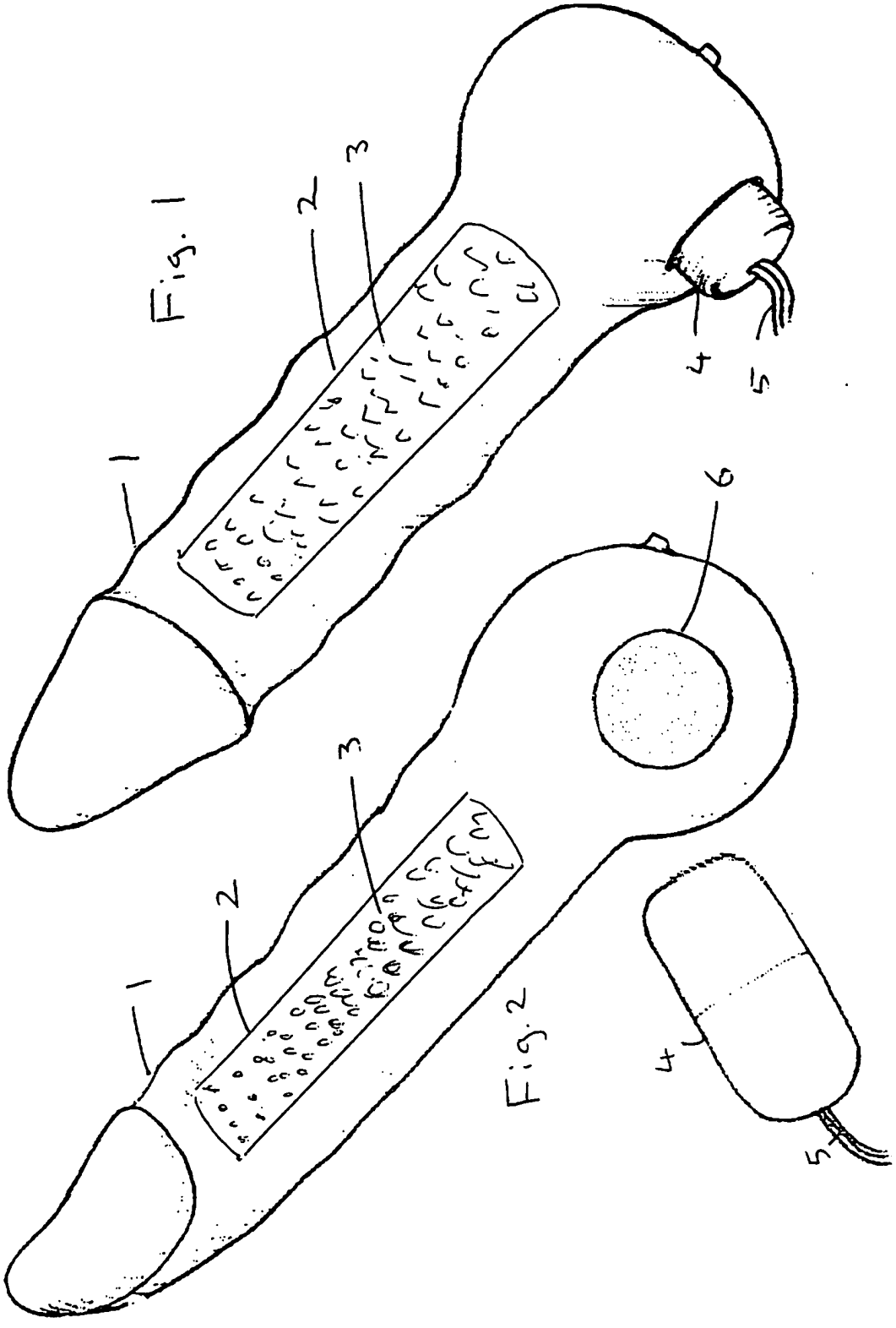
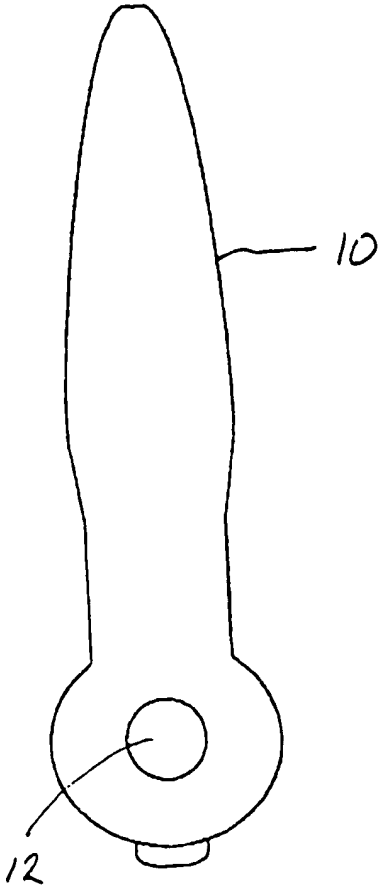


Fig. 1

Fig. 2

Fig 3



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EUROPEAN SEARCH REPORT

Application Number
EP 99 30 6774

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	23 December 1999	Georgiou, Z

CATEGORY OF CITED DOCUMENTS

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